

CLAIMS:

1. A method of breaking a substrate of brittle material, the method comprising the steps of:

- providing a substrate of a brittle material,
- heating the substrate with a laser beam to create a heated spot on the substrate,
- 5 – moving the laser beam and the substrate with respect to each other to create a line of heated spots on the substrate,
- cooling the heated spots on the substrate by locally applying a cooling medium such that a micro-crack in the line of heated spots is propagated, and
- breaking the substrate along the line of the propagated micro-crack by applying a force on
- 10 the substrate

wherein the cooling medium comprises an aqueous surfactant solution.

2. A method of breaking a substrate of brittle material according to claim 1, wherein the cooling medium further comprises air mixed with the aqueous surfactant

15 solution.

3. A method of breaking a substrate of brittle material according to claim 1, wherein the concentration of the surfactant is in the range of 0.01 to 1 % of weight.

20 4. A method of breaking a substrate of brittle material according to claim 1, wherein the aqueous surfactant solution comprises a cationic surfactant.

5. A method of breaking a substrate of brittle material according to claim 3, wherein the cationic surfactant comprises cetyl trimethyl ammonium bromide (CTAB).

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6. A method of breaking a substrate of brittle material according to claim 1, wherein the aqueous surfactant solution comprises a nonionic surfactant.

7. A method of breaking a substrate of brittle material according to claim 5, wherein the nonionic surfactant comprises octadecyl deca(ethylenoxide) hydroxide.
8. A method of breaking a substrate of brittle material according to claim 1, wherein the aqueous surfactant solution comprises an anionic surfactant.
9. A method of breaking a substrate of brittle material according to claim 7, wherein the anionic surfactant comprises dodecylbenzene sulfonic acid sodium salt.
10. A method of breaking a substrate of brittle material according to claim 1, wherein the brittle material comprises glass, crystalline silica, ceramics or compositions thereof.